

### **Remarks**

Since this application is a 371, the Patent Office has automatically titled this application to “Polylactic Acid Base Polymer Composition, Molding Thereof and Film.” Applicants respectfully request that the title be amended to --Poly(lactic Acid) Polymer Composition, Formed Plastics Thereof and Film-- which is the title on the English translation of the specification.

The Applicants have amended Claims 11 and 12 to place them into better grammatical form. No new matter has been added and no changes have been made in the claimed scope.

The Applicants note the rejection of Claims 1 – 5 and 17 under 35 U.S.C. §102 over JP ‘665 and EP ‘894. The Applicants respectfully submit that all of those claims are not anticipated by JP ‘665 or EP ‘894 for the reasons set forth in detail below.

JP ‘665 discloses a composition comprising (A) a polymer mainly containing lactic acid and (B) a block copolymer of (i) polyalkylene ether and (ii) a poly(lactic acid). The molecular weight of the entire block copolymer (B) is greater than/equal to 10,000. The Applicants respectfully submit that such disclosure fails to explicitly or implicitly disclose every feature of the Applicants’ recited claims. For example, the Applicants specifically recite a polymer composition comprising a poly(lactic acid) polymer exhibiting crystallinity and a plasticizer. The plasticizer has at least one poly(lactic acid) segment having a molecular weight of 1,200 and comprises a polyether and/or a polyester segment. This is completely different from JP ‘665. The Applicants’ Claim 1 recites that the poly(lactic acid) segment of the plasticizer has a molecular weight of 1,200 or more per molecule. This is sharply different from the molecular weight of greater than or equal to 10,000 for the entire block copolymer (B) of JP ‘665. In other words, the Applicants claim that a portion of their (B) component, namely the plasticizer, has a molecular weight of 1,200 while JP ‘665 discloses that the entire (B) component, namely the block copolymer, has a molecular weight of greater

than/equal to 10,000. JP '665 does not disclose the molecular weight of the polyalkylene ether (i) component or the poly(lactic acid) (ii) component of the block copolymer (B). Instead, it is the entire component (B) that has the specified molecular weight as opposed to the portion of the Applicants' component (B) that has the specified molecular weight. Therefore, the Applicants respectfully submit that JP '665 is inapplicable to Claim 1.

The Applicants invite the Examiner's attention to the Applicants' Claim 2, wherein the plasticizer, which is one of three components, comprises a polyether and/or polyester segment and has no poly(lactic acid) segment having a molecular weight of 1,200 or more. The Applicants respectfully submit that JP '665 is inapplicable to that claim as well. The Applicants have already established that JP '665 fails to disclose a molecular weight for the component (B) poly(lactic acid) at all. The Applicants' Claim 2 specifically recites that there is no poly(lactic acid) segment having a molecular weight of 1,200 or more. This is quite different from the JP '665 disclosure that calls for the presence of a poly(lactic acid), but has no disclosure at all concerning its molecular weight. Therefore, the Applicants respectfully submit that JP '665 is inapplicable to Claim 2.

The Applicants invite the Examiner's attention to Claim 3 which, in certain respects, is similar to Claim 2. Again, Claim 3 specifically recites a plasticizer comprising a polyether and/or polyester segment and it has no poly(lactic acid) segment having a molecular weight of 1,200 or more. As noted above, JP '665 discloses the presence of a poly(lactic acid), but with no reference at all to its molecular weight. Therefore, JP '665 fails to disclose each and every specifically recited aspect of Claim 3.

The Applicants respectfully submit that JP '665 is also inapplicable to the Applicants' independent Claim 17. Claim 17 specifically recites a polymer composition comprising a poly(lactic acid) polymer exhibiting no crystallinity and a plasticizer which contains no poly(lactic acid)

polymer exhibiting crystallinity and a polyether and/or a polyester segment. JP '665 is entirely silent with respect to the crystallinity of the component (A) poly(lactic acid). There is no disclosure as to whether it is crystalline or not. Therefore, JP '665 is inapplicable on that basis alone.

JP '665 is further inapplicable to Claim 17 inasmuch as the plasticizer (B) component contains no poly(lactic acid) polymer exhibiting crystallinity. Again, there is utterly no disclosure in JP '665 on this point. JP '665 calls for the presence of poly(lactic acid) in its (B) component, but there is no reference to whether that poly(lactic acid) is crystalline or not. JP '665 is, therefore, inapplicable.

The Applicants respectfully submit that JP '665 is inapplicable to all of the Applicants' independent claims for the reasons set forth above. It is further inapplicable to the dependent claims for at least the same reasons. Withdrawal of the rejection based on JP '665 is respectfully requested.

The Applicants respectfully submit that EP '894 is also inapplicable to all of Claims 1 – 15 and 17. EP '894 discloses a resin composition comprising a high molecular ingredient (A) which contains poly(lactic acid) (a1) and a biodegradable aliphatic polyester (a2), and a biodegradable plasticizer (B). EP '894 further discloses that the molecular weight of the poly(lactic acid) and aliphatic polyester (a2) are not particularly limited and are preferably 10,000 to 1,000,000. However, that reference is to the poly(lactic acid) (a1) and the aliphatic polyester (a2) that form the high-molecular ingredient (A). That molecular weight does not refer to the plasticizer (B).

Referring now to the Applicants' Claim 1, it can be seen that the Applicants' plasticizer (B) specifically claims a poly(lactic acid) segment having a molecular weight of 1,200 or more. EP '894 fails to disclose this inasmuch as the molecular weight referred to in EP '894 refers to the (A) component as a whole and not at all to the (B) component, which is the plasticizer in Claim 1.

Therefore, EP '894 is inapplicable to Claim 1.

With respect to Claim 2, it specifically recites a plasticizer comprising a polyether and/or polyester segment and has no poly(lactic acid) segment having a molecular weight of 1,200 or more.

EP '894 utterly fails to address this issue at all. It is therefore inapplicable. However, the Applicants also specifically claim a poly(lactic acid) polymer exhibiting crystallinity on the one hand and a poly(lactic acid) polymer exhibiting no crystallinity on the other hand. There is no mention of crystallinity at all in EP '894, much less a poly(lactic acid) polymer component having crystallinity and a poly(lactic acid) polymer having no crystallinity. EP '894 is also inapplicable for that reason as well.

With respect to Claim 3, the same comments apply with respect to the plasticizer and the fact that there is no poly(lactic acid) segment having a molecular weight of 1,200 or more. EP '894 does not address this issue at all. Similarly, Claim 3 recites a poly(lactic acid) polymer exhibiting crystallinity. EP '894 fails to disclose crystallinity at all and those skilled in the art have no knowledge as to crystallinity of the EP '894 poly(lactic acids). Therefore, EP '894 is inapplicable to Claim 3 as well.

The same basic principle applies to Claim 17, which specifically recites a poly(lactic acid) polymer exhibiting no crystallinity. EP '894 does not address the issue of crystallinity and therefore does not disclose whether the poly(lactic acids) exhibit crystallinity or exhibit no crystallinity. Claim 17 also specifically recites that the entire composition contains no poly(lactic acid) polymer exhibiting crystallinity. Again, EP '894 fails to disclose this, either explicitly or implicitly. EP '894 is accordingly inapplicable to Claim 17.

The Applicants note the rejection of Claims 1 – 17 under 35 U.S.C. §102 over US '495. The Applicants respectfully submit that US '495 is inapplicable to all of Claims 1 – 17 for the reasons set

forth in detail below.

US '495 discloses a polylactide polymer having a number average molecular weight of between about 25,000 and 200,000 and between about 0.01 weight percent and about 2 weight percent of a deactivating agent. Such disclosure is inapplicable to Claims 1 – 17.

The Applicants' Claim 1 recites a plasticizer that has at least one poly(lactic acid) segment having a molecular weight of 1,200 or more per molecule. US '495 fails to disclose this, either explicitly or implicitly. US '495 discloses a polylactide polymer having a number average molecular weight of between 5,000 and 200,000. However, this is the (A) component and not the (B) component as recited in Claim 1, or even a segment of the (B) component as specifically recited in Claim 1. In that regard, the Applicants' claimed plasticizer, to the extent that it corresponds to any of the US '495 disclosure, refers to the deactivating agent, not the polylactide polymer about which the molecular weight is described. Referring to the discussion of the deactivating agent in US '495, such as beginning about midway through Column 12, there is nothing with respect to the molecular weight of a poly(lactic acid) segment. There is some discussion of high molecular weight polyacrylic acids having a number average molecular weight between about 40,000 and 500,000. However, there is no disclosure with respect to the molecular weight of any poly(lactic acid) segment. Therefore, US '495 is inapplicable to Claim 1.

The Applicants' Claim 2 recites a poly(lactic acid) polymer exhibiting crystallinity and a poly(lactic acid) polymer exhibiting no crystallinity. US '495 fails to disclose any reference to crystallinity, much less a poly(lactic acid) polymer exhibiting crystallinity and a poly(lactic acid) polymer exhibiting no crystallinity. Further, as noted above, there is no reference to poly(lactic acid) segments having molecular weight of 1,200 or more. Claim 2 specifically recites that there is no poly(lactic acid) segment having a molecular weight of 1,200 or more. US '495 fails to address this

issue at all. Therefore, US '495 is inapplicable to Claim 2.

The Applicants respectfully submit that US '495 is also inapplicable to Claim 3 for essentially the same reasons set forth above with respect to Claim 2. Claim 3 also recites that there is no poly(lactic acid) segment having a molecular weight of 1,200 or more. US '495 fails to address this issue at all. Claim 3 also recites that there is a poly(lactic acid) polymer exhibiting crystallinity and having a melting point lower than 145°C. This issue is also not addressed at all in US '495. It is therefore inapplicable to Claim 3.

US '495 is also inapplicable to Claim 17. Claim 17 recites a poly(lactic acid) polymer exhibiting no crystallinity. US '495 fails to disclose whether any of the materials are crystalline or not. It therefore inherently does not apply to Claim 17. Claim 17 further recites that the entire polymer composition contains no poly(lactic acid) polymer exhibiting crystallinity. Again, US '495 is silent on this aspect. Accordingly, US '495 is also inapplicable to Claim 17. Withdrawal of the rejection of Claims 1 – 17 based on US '495 is respectfully requested.

The Applicants note the rejection of Claims 1 – 17 under 35 U.S.C. §102 over US '401. The Applicants respectfully submit that US '401 is inapplicable to all of Claims 1 – 17 for the reasons set forth in detail below.

US '401 discloses a multilayer film that includes a core layer sandwiched between a first blocking reducing layer and a second blocking reducing core layer. The second blocking reducing core layer comprises a lactic acid residue containing polymer. All of the layers may be made of poly(lactic acid), polylactide and other components. The molecular weight may be a number average molecular weight in the range of about 50,000 to about 200,000. The core layer can include a plasticizer to reduce the glass transition temperature. The plasticizer can include alkyl or aliphatic esters and ethers. Separately, the blocking reducing layers are hydrolysable polymers such as lactic

acid residue polymers having a number average molecular weight of about 50,000.

Thus, US '401 fundamentally discloses a core layer that may be made of poly(lactic acid) and a plasticizer of alkyl or aliphatic esters and ether. However, this is not what the Applicants claim. Referring first to Claim 1, the Applicants specifically recite a plasticizer that has at least one poly(lactic acid) segment having a molecular weight of 1,200 or more. US '401 fails to disclose this. Instead, the plasticizer of US '401 is an alkyl or aliphatic ester or ether. There is no disclosure of the plasticizer containing a poly(lactic acid) segment having a molecular weight of 1,200 or more. The reference to molecular weights in US '401 does not refer to the plasticizer, but refers to the main layers.

Claim 2 differs from Claim 1 and recites a poly(lactic acid) polymer exhibiting crystallinity and, separately, a poly(lactic acid) polymer exhibiting no crystallinity. There is no disclosure, coming either explicitly or implicitly, of such two components in US '401. US '401 therefore does not apply to Claim 2. Claim 2 also recites a plasticizer that has no poly(lactic acid) segment having a molecular weight of 1,200 or more.

Claim 3 recites a poly(lactic acid) polymer having a melting point lower than 145°C. US '401 is directed to glass transition temperatures, not melting points, and therefore does not disclose the claimed melting point. Also, Claim 3 specifically recites a plasticizer that comprises a polyether and/or a polyester segment and that has no poly(lactic acid) segment having a molecular weight of 1,200 or more. As previously noted with respect to Claim 2, there is no disclosure in US '401 concerning the plasticizer containing or not containing a poly(lactic acid) segment having a molecular weight of 1,200 or more. US '401 is therefore inapplicable to Claim 3.

The Applicants respectfully submit that US '401 is also inapplicable to Claim 17. It specifically recites that the polymer composition as a whole contains no poly(lactic acid) polymer

exhibiting crystallinity and further recites a poly(lactic acid) polymer exhibiting no crystallinity. US '401 fails to address the issue of the complete composition containing no poly(lactic acid) polymer that does exhibit crystallinity on the one hand and, on the other hand, a poly(lactic acid) polymer exhibiting no crystallinity. The Applicants therefore respectfully submit that US '401 is inapplicable to Claim 17. Withdrawal of the rejection of Claims 1 – 17 based on US '401 is accordingly respectfully requested.

The Applicants note the rejection of Claim 16 under 35 U.S.C. §103 over JP '278. The Applicants respectfully submit that JP '278 fails to teach or suggest the subject matter of Claim 16 for the reasons set forth in detail below.

JP '278 relates to a sheet of poly(lactic acid) polymer that is longitudinally stretched at a stretching temperature of 50 – 90°C with a stretching magnification range of 1.5 – 5 times. The sheet is subsequently laterally stretched at a stretching temperature of 50 - 80°C with a stretching magnification range of 1.5 – 5 times. After biaxial stretching, the resulting stretched film may be heat treated at a temperature of 70°C.

The film includes a poly(lactic acid) polymer that may be copolymers of poly(lactic acid) or a lactic acid, and other hydroxycarboxylic acid or mixtures thereof. The poly(lactic acid) may be polymerized to a weight average molecular weight of 10,000. However, such a disclosure is inapplicable to Claim 16 inasmuch as it fails to teach or suggest important aspects of that claim. For example, Claim 16 ultimately depends from Claims 1, 2 or 3. Claim 1 explicitly recites a poly(lactic acid) polymer exhibiting crystallinity. JP '278 fails to disclose this. Claim 1 also recites a plasticizer having at least one poly(lactic acid) segment having a molecular weight of 1,200 or more per molecule. JP '278 fails to disclose this. The Applicants therefore respectfully submit that JP '278 is inapplicable to Claim 16 to the extent that it depends from Claim 1.

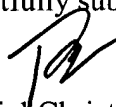


The Applicants also respectfully submit that JP '278 is inapplicable to Claim 16 to the extent that Claim 16 depends from Claim 2. Claim 2 specifically recites a poly(lactic acid) polymer exhibiting crystallinity and a poly(lactic acid) polymer exhibiting no crystallinity. There is no disclosure, teachings or suggestions with respect to crystallinity, much less a composition that includes a poly(lactic acid) polymer exhibiting crystallinity on the one hand and a poly(lactic acid) polymer exhibiting no crystallinity on the other hand.

The Applicants respectfully submit that JP '278 is inapplicable to Claim 16 to the extent that it depends from Claim 3. Claim 3 recites a poly(lactic acid) polymer exhibiting crystallinity, which is not disclosed by JP '278. Also, Claim 3 recites a plasticizer comprising a polyether and/or polyester segment and has no poly(lactic acid) segment having a molecular weight of 1,200 or more. JP '278 fails to disclose, teach or suggest a plasticizer that has no poly(lactic acid) segment having a molecular weight of 1,200 or more. There is no reference to a plasticizer generally and no reference to the absence of a poly(lactic acid) segment having a molecular weight of 1,200 or more. Accordingly, the Applicants respectfully request withdrawal of the rejection of Claim 16 based on JP '278.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury  
Reg. No. 31,750  
Attorney for Applicants

TDC:vbm  
(215) 656-3381